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THE TRUE NECK OF THE FEMUR: ITS STRUCTURE AND PATHOLOGY.

BY HENRY J. BIGELOW, M. D.

I. — STRUCTURE.

SOME of the later numbers of Virchow's Archives contain a protracted yet interesting discussion upon the interior structure of bones: notably of the head of the femur. According to Merkel,[1] G. H. Meyer, in 1867, pointed out certain arching fibres in their cancellated structure as "a well-marked architecture, which stands in the closest relation to the static and dynamic forces of the bones."

In 1870,[2] Wolff made further investigation of this subject, and, in addition, this writer incorporated into his paper certain elaborate mathematical calculations of Culmann, of Zurich, showing that interior braces intended to aid in supporting a weight upon the end of a cylinder curved like the thigh-bone, or like a crane or derrick, should be placed, in order to act to best advantage, precisely where the trabeculæ of the spongy tissue of this bone actually exist. "Nature," says Wolff, "has built the spongy bones, as an engineer would construct a truss bridge, mathematically."

This recent German investigation, apart from the mathematical calculation which Merkel avows his inability to follow, was anticipated, so long ago as 1850, by the late Prof. Jeffries Wyman, who, in a comprehensive article upon this subject,[3] reached the following conclusions:

"1. The cancelli of such bones as assist in supporting the weight of the body are arranged either in the direction of that weight, or in such a manner as to support and brace those cancelli which are in that direction. In a mechanical point of view, they may be regarded in nearly all these bones as a series of 'studs' and 'braces.'

"2. The direction of the fibres in some of the bones of the human skeleton is characteristic, and it is believed has a definite relation to the erect position, which is naturally assumed by man alone.

"These structures are most clearly defined in adult and middle-aged skeletons."

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[1] Virchow's Archives, 1874; vol. 59, p. 237.

[2] Ibid., 1870; vol. 50, p. 389.

[3] Boston Journal of Natural History, 1850; vol. 6, No. 1, p. 125: Report of the Committee on Medical Sciences; Transactions of the Medical Association, 1850.

Dr. Wyman illustrates his paper by diagrams alone sufficient to demonstrate, even to a common mechanic, an advantageous adaptation of means to end. An internal structure, shown to be rectangular in the vertebræ, radiating in the tarsal bones, and arched in the neck of the femur, obviously offers economical resistance to the weight it is designed to carry. But, if doubt be still entertained, the laborious calculations of Culmann, assumed to be correct, establish the fact absolutely, so far as the femoral neck is concerned.

Thus much for the spongy structure of the bones in general. (See Fig. 1.) We are now to consider an arrangement peculiar to the interior of the neck of the thigh-bone. According to Merkel, a section of this may be seen in an illustration designed for another purpose, many years ago, by Pirogoff, who, however, does not allude to it. In 1870,[1] Wolff speaks of it as "a compact tissue beneath the trochanter minor."

In 1874, in an able paper largely devoted to its description, Merkel[2] calls this compact tissue the "calcar femorale," "schenkelsporn," or thigh-spur. The special object of Merkel's paper is to prove its predominant importance in sustaining the weight of the body, and to show that the strength of the neck of the femur is mainly due to this dense tissue, and not to the braces of Wolff and Culmann. Although a little embarrassed by variations of the "spur" as it appears in different preparations, "being in some straight, in others curved," he insists strongly upon its teleological importance; doubting whether the arrangement of the spongy tissue possesses the same significance, because the calcaneum of man and that of the ox, as shown by Wolfermann, really perform very different functions, although they offer a similar internal structure: a statement equally true of the spongy system generally. On the other hand, Wolff, in a second paper,[3] replies that "the calculations of Culmann prove that the 'spur' is not at the point of greatest strain, nor yet where strength is most needed;" that "Merkel's theory in no way agrees with Culmann's calculations, which may be accepted as beyond controversy;" and that "Merkel has ascribed to the 'spur' a wholly erroneous importance."

In the following foot-note,[4] Merkel again insists upon his views: —

"While these sheets are being printed, I have received the work of Bigelow upon the Mechanism of Dislocation and Fracture of the Hip, translated by Pochhammer (Berlin, Hirschwald), in which the *schenkelsporn* is both described and figured; he does not, however, follow out the significance of the structure."

Before again expressing my own opinion of the purpose of the bony plate in question, it may not be amiss to cite here the description alluded to by Merkel, especially as I do not discover that anything of importance has been added to it since its publication in 1869: —

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[1] Virchow's Archives, 1870; vol. 50, p. 389.

[2] Ibid., 1874; vol. 59, p. 237.

[3] Ibid., 1874; vol. 61, p. 417.

[4] Ibid., 1874; vol. 59, p. 251.

" ANATOMICAL STRUCTURE OF THE NECK OF THE FEMUR.[1]

" Let a well-developed femur be placed in a vice with its back towards the observer, in its natural upright position, but obliquely, as if the legs were widely separated, the shaft being so far inclined that the neck is horizontal. Let a first slice be now removed from the top of the head, neck, and trochanter, by a saw carried horizontally through the neck. Let a second and third slice be removed in the same way, so that the neck shall be divided into four horizontal slices of equal thickness.[2]

" It will be found that the upper section exhibits the anterior and posterior walls of nearly equal thickness, but that, as we approach the lower surface of the neck, the anterior wall becomes of great thickness and strength, while the posterior wall remains thin, especially at its insertion beneath the posterior intertrochanteric ridge, where it is of the thinness of paper. (Fig. 2.)

" TRUE NECK.

" Upon examining the lower of the above sections in a well-marked bone, the posterior or papery wall of the neck will be seen to be prolonged by radiating plates into the cancellous structure beneath the intertrochanteric ridge. That the thickest of these (Fig. 2) is a continuation of the true neck may be shown in another way. Let the whole of the posterior intertrochanteric ridge, including the back part of both trochanters, be removed by a narrow, thin saw. (Fig. 4.) The bone being now laid upon a table, let a chisel, or, what is better, a gouge, be held perpendicularly upon the cancellous structure thus exposed, and lightly twirled until the friable and spongy tissue is removed and the instrument arrested by the septum or wall alluded to. To expose its inner surface, the shaft should be split by a vertical and curved section behind this wall, and the cancellous structure removed in the same way.

" The septum will then be distinctly seen, as a thin, dense plate of bone continuous with the back of the neck, and reinforcing it, plunging beneath the intertrochanteric ridge in an endeavor to reach the opposite and outer side of the shaft. At its lower extremity it curves a little forward, so as to take its origin, when on a level with the lesser trochanter, from the centre, instead of the back, of the cylindrical cavity, — a disposition easily seen in a transverse section of the shaft just above the trochanter minor. (Fig. 3.) Or it may be said that the posterior wall of the neck forks before reaching the intertrochanteric line, one layer being seen upon the surface, while the other dives beneath the intertrochanteric ridge in a vain attempt to reach the outer wall of the shaft. If these views be correct, the intertrochanteric ridge is simply a buttress erected for the insertion of muscles upon and over the true neck, by the impaction of which it is in fact often split off and detached in a mass, the force exerted by the true neck, though slight, being nevertheless an effort to resist such impaction."

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[1] The Hip (Philadelphia, Henry C. Lea), 1869; p. 120.

[2] " If the head of the bone be now vertically transfixed by a wire, the sections may be spread for examination, like a fan."

As regards ordinary spongy tissue, the teleological question is satisfactorily answered in either of two ways. We may attribute its architecture to that immediate necessity which, in pathology, builds a buttress to support a bone curved by rickets or weakened by fracture, or explain it by a general principle of conformation, in a measure automatic, developed in the lapse of generations by a frequently recurring necessity, and still continuing to act without immediate stimulus.

But the purpose of the osseous plate, whose structure and pathology it is the main object of this paper to discuss, may be at first a little less obvious. It plainly adds a certain strength to the bone, and yet in most bones it terminates beneath the trochanters in papery lamellæ wholly inadequate to lend it material support. It is usually united, even to the trochanters, only by a delicate wall and spongy tissue. It obeys the laws of similar bony structure, being feebly developed in childhood; while later in life its absence in the femoral neck impresses us, as do bone-sections generally, with the truth of the observation of Henle, that the so-called brittleness of age depends not so much on the loss of animal substance as upon the atrophy of the bony walls and interior structure.

These varying appearances might well leave us in doubt as to the purpose of this osseous plate; but no doubt can exist in the mind of one who examines an exceptionally well-marked adult bone. Such a bone fell under my observation in 1861. (Fig. 4.) The dense plate is there a continuation of the neck, completing the interval everywhere except at its upper part. In this form it adds greatly to the strength of this part of the femur, while the trochanters and their ridge erected upon it both reinforce it and give attachment to the muscles.

This may be again shown. In a back view of the femur (Fig. 5), the neck appears as a pyramid with its base to the trochanters. The cylindrical shaft also spreads as it rises to meet the trochanters. In a side view (Fig. 6), it is seen that both these cylinders, joined at their bases, are flattened from front to back, and are continuous in shape and direction, although surmounted at their junction by the trochanteric prominences. If we now remove the trochanters with their connecting ridge (Figs. 5 and 6), it may be again observed that what we have called the true neck maintains the continuity of the shaft. It no longer resembles a "spur," with its edge exposed by excavating the wall, as in Merkel's preparations. Thus denuded, the shaft has an air of symmetrical strength. It is flattened to resist weight, like a bone curved by disease, while the trochanters seem to have been added for a different purpose.

Unfortunately, bones like that above alluded to are rare. The true neck is often at best but an ineffectual attempt to bridge the interval beneath the trochanters, as seen in Merkel's figures, while, in the latter half of life, it degenerates into papery plates radiating downward from a point near the lesser trochanter.

Weakened in this way both by its own tenuity and by its slender union to the trochanteric ridge, the true neck has great practical interest for the surgeon. Even the adult femur is generally defective in construction at this point; and here occurs the most common form of fracture, namely, the posterior impacted fracture of the base of the neck.

(*To be continued in the next number.*)

EXPLANATION OF FIGURES.

Fig. 1. A specimen showing repair of the acetabulum after hip disease is here figured. The subject, a boy of a dozen years, was from the dissecting room. Large sinuses still remained open. The head and neck of the femur had disappeared, and the trochanters were united to the ilium by a narrow isthmus of bone, an inch above and behind the socket. The latter is filled with a curious right-angled net-work, extending to some depth, the explanation of which is not obvious; and whether it be sought in the influence of a neighboring rectangular spongy tissue towards the spine of the ischium, or in prolonged fibres of the vertical ramus of the ischium and the horizontal one of the pubes interlaced beyond their normal boundary in the healthy socket, or lastly in some accidental traction upon tissue afterwards ossified, the solution is equally unsatisfactory. At the bottom of the figure is the tuberosity. A perforation near the socket was in the track of a sinus.

"Fig. 2. Exhibits a bird's-eye view of a horizontal section of the neck of the femur, showing the posterior wall plunging beneath the intertrochanteric ridge, at the angle where the neck joins the shaft. The posterior wall is of the thinness of paper, and here impaction occurs. The anterior wall, on the contrary, is seen to be quite thick, and forms by its fracture a hinge which is very rarely impacted.

"Fig. 3. The same. The section of the shaft near the lesser trochanter shows the lower extremity of the septum, where the wall is thicker and changes its direction. (From a photograph taken in 1861.)

"Fig. 4. Anatomy of impacted fracture. The intertrochanteric ridge has been removed, and the cancellous structure so excavated as to exhibit the true neck beneath. The rod is placed in a longitudinal fissure by which the shaft of the bone has been split, in order to exhibit the true neck from within. (From a photograph taken in 1861.)"

Fig. 5. Rear view of left femur with and without the trochanters. The removal of these exposes, in the left-hand figure, the true neck.

Fig. 6. Side view of the same. While these views are designed to exhibit the true neck, it is not denied that the trochanteric shell helps to stiffen the curving shaft and to sustain any weight resting upon the head of the bone; especially through the intervention of the upper and horizontal part of the neck.

THE PHYSIOLOGY OF VERSIFICATION.

HARMONIES OF ORGANIC AND ANIMAL LIFE.

BY OLIVER WENDELL HOLMES, M. D.

We are governed in our apparently voluntary actions by impulses derived from many obscure sources which act upon us almost without our cognizance. The digestive system legislates largely for our habits, bodily and mental, and its condition has no insignificant effect upon our intellectual and spiritual states. We are commanded to a considerable extent by our idiosyncrasies and infirmities. The secret of our diversities as social beings lies far more in our peptic capacities, in our indifference to exposure or liability to suffer from it, in our sensibility to cold and heat or to the air of ill-ventilated rooms, in the varying amount of sleep we require, in the degree of ability to bear strong light, in the quickness or dulness of our hearing, in the greater or less degree of fatigue induced by the standing posture, and in the demands of internal organs which have a will if not a voice of their own, than our friends who call us good companions or otherwise are always ready to believe.

There are two great vital movements preëminently distinguished by their rhythmical character, — the respiration and the pulse. These are the true time-keepers of the body; having a constant relation in health, the proportion being, as Mr. Hutchinson has shown, one inspiration to every four beats of the heart. It is very easy to prove that the first of these rhythmical actions has an intimate relation with the structure of metrical compositions. That the form of verse is conditioned by economy of those muscular movements which ensure the oxygenation of the blood is a fact which many have acted on the strength of without knowing why they did so.

Let us look first at the natural rate of respiration. Of 1817 individuals who were the subject of Mr. Hutchinson's observations, "the great majority (1731) breathed from sixteen to twenty-four times per minute. Nearly a third breathed twenty times per minute, a number which may be taken as the average." [1]

The "fatal facility" of the octosyllabic measure has often been spoken of, without any reference to its real cause. The reason why eight syllable verse is so singularly easy to read aloud is that it follows more exactly than any other measure the natural rhythm of respiration. In reading aloud in the ordinary way from The Lay of the Last Minstrel, from In Memoriam, or from Hiawatha, all written in this measure, the first two in iambics, or short-longs, the last in trochaics or long-shorts, it will be found that not less than sixteen nor more than twenty-four lines will be

[1] Flint's Physiology, i. 391.

spoken in a minute, probably about twenty. It is plain, therefore, that if one reads twenty lines in a minute, and naturally breathes the same number of times during that minute, he will pronounce one line to each expiration, taking advantage of the pause at its close for inspiration. The only effort required is that of vocalizing and articulating; the breathing takes care of itself, not even demanding a thought except where the sense may require a pause in the middle of a line. The very fault found with these octosyllabic lines is that they slip away too fluently, and run easily into a monotonous sing-song.

In speaking the ten syllable or heroic line, that of Pope's Homer, it will be found that about fourteen lines will be pronounced in the minute. If a breath is allowed to each line the respiration will be longer and slower than natural, and a sense of effort and fatigue will soon be the consequence. It will be remembered, however, that the *cæsura*, or pause in the course of the line, comes in at irregular intervals as a "breathing-place," which term is its definition when applied to music. This gives a degree of relief, but its management requires care in reading, and it entirely breaks up the natural rhythm of breathing.

The fourteen syllable verse, that of Chapman's Homer, the common metre of our hymn-books, is broken in reading into alternate lines of eight and six syllables. This also is exceedingly easy reading, allowing a line to each expiration, and giving time for a little longer rest than usual at the close of the six syllable line.

The twelve syllable line, that of Drayton's Polyolbion, is almost intolerable, from its essentially unphysiological construction. One can read the *ten* syllable line in a single expiration without any considerable effort. One instinctively divides the *fourteen* syllable line so as to accommodate it to the respiratory rhythm. But the *twelve* syllable line is too much for one expiration and not enough for two. For this reason, doubtless, it has been instinctively avoided by almost all writers in every period of our literature.

The long measure of Tennyson's Maud has lines of a length varying from fourteen to seventeen syllables, which are irregularly divided in reading for the respiratory pause. Where the sense does not require a break at some point of the line we divide it by accents, three in each half, no matter what the number of syllables; but the breaks which the sense requires so interfere with the regularity of the breathing as to make these parts of Maud among the most difficult verses to read aloud, almost as difficult as the Polyolbion.

It may be said that the law of relation here pointed out does not apply to the *writing* of verse, however it may be with regard to reading or declaiming it. But the early poems of a people are recited or sung before they are committed to writing, and even if a versifier does not read aloud as he writes, he mentally articulates every line, and takes cognizance instinctively of its physiological adjustment to respiration as he does of its smoothness or roughness, which he hears only in imagination.

The critical test of poetry by the stop-watch, and its classification according to its harmonizing more or less exactly with a great vital function, does not go very far, but it is quantitative and exactly scientific so far as it does go. The average reader will find on trial that the results given above are correct enough to justify the statements made. But here, as in astronomical observation, we must not forget the personal equation. An individual of ample chest and quiet temperament may breathe habitually only fourteen times in a minute, and find the heroic or iambic pentameter, — the verse of Pope's Homer and Gray's Elegy, — to correspond with his respiratory rhythm, and thus to be easier than any other for him to read. A person of narrower frame and more nervous habit may breathe oftener than twenty times in a minute, and find the seven syllable verse of Dyer's Grongar Hill fits his respiration better than the octosyllables of Scott or Tennyson or Longfellow. A quick-breathing little child will learn to recite verses of two and four syllables, like the story of the couple whose predilections in favor of azotized and non-azotized diet are recorded in our nursery classic, and do it easily, when it would have to catch its breath in the middle of lines of six or seven syllables.

Nothing in poetry or in vocal music is widely popular that is not calculated with strict reference to the respiratory function. All the early ballad poetry shows how instinctively the reciters accommodated their rhythm to their breathing. Chevy Chace or The Babes in the Wood may be taken as an example for verse. God save the King, which has a compass of some half a dozen notes and takes one expiration, economically used, to each line, may be referred to as the musical illustration.

The unconscious adaptation of voluntary life to the organic rhythm is perhaps a more pervading fact than we have been in the habit of considering it. One can hardly doubt that Spenser breathed habitually more slowly than Prior, and that Anacreon had a quicker respiration than Homer. And this difference, which we conjecture from their rhythmical instincts, if our conjecture is true, probably, almost certainly, characterized all their vital movements.

It seems not unlikely that other organic rhythms may be found more or less obscurely hinted at in the voluntary or animal functions. How far is *accent* suggested by or connected with the movement of the pulse, every stroke of which, if it does not lift the brain, as Bichat taught, sends a shock through its whole substance, and compresses it in its unyielding case? It is worth noting that twenty acts of respiration mean eighty arterial pulsations, and that twenty octosyllabic lines corresponding to these eighty pulsations have exactly eighty accents. Again, there is a singular coincidence between the average pulsations of the arteries and the number of steps taken in a minute; and as we hurry our steps, the heart hurries to keep up with them. They sometimes correspond so nearly that one is reminded of the relation between the steam-chest, with its two alternately opening valves, and the piston with its corresponding movements, as we see it in the steam-engine. The doctrine of Bichat referred to above has been combated on the ground that the closely imprisoned brain could not be lifted; but the forcible impact of the four columns of arterial blood is none the less real in the normal condition than when the brain is seen to be raised through an accidental opening in the skull. So, also, notwithstanding the gradual equalization of the cardiac impulse, this impulse must be felt very extensively throughout the body. We see that it can lift a limb through a considerable space when we happen to sit with one leg crossed over the other. It is by no means impossible that the regular contractions of the heart may have obscure relations with other rhythmical movements more or less exactly synchronous with their own; that our accents and our gestures get their first impulse from the cardiac stroke which they repeat in visible or audible form. In these funeral marches which our hearts are beating, we may often keep step to the cardiac systole more nearly than our poet suspected. But these are only suggestions to be considered and tested; the relations of verse to the respiratory rhythm will be easily verified and extended by any who may care to take the trouble.

RECENT PROGRESS IN MEDICAL CHEMISTRY.

BY E. S. WOOD, M. D.

TOXICOLOGY.

Chronic Lead Poisoning. — Of late the attention of physicians and chemists has been largely drawn to this subject on account of the increasing frequency of its occurrence, and on account of its great importance from a hygienic point of view. Not much that is new has been added to our knowledge of the sources of lead poisoning, but many experiments have been performed which assist in explaining the exact action of the various kinds of water upon lead pipe, and much has been done to discover means for purifying water which has become contaminated with lead compounds, and for substituting innocuous utensils instead of those which contain lead in their composition.

That distilled water when exposed to the air has a very powerful action upon metallic lead is not a new observation. Thus, M. Pierre (*Journal de Pharmacie et de Chimie*, June, 1874) detected 0.078 grm.

of the hydrocarbonate of lead in the distillate collected after passing steam through a coil of lead pipe. Nor is it new that the presence of certain salts in water modifies this action very greatly. The effect of various saline compounds has been studied at considerable length by M. Fordos (*Journal de Pharmacie et de Chimie*, July, 1874). He finds that in potable waters which contain bicarbonate of calcium, the oxide of lead combines with a part of the carbonic acid, and there results a precipitate of the mixed carbonates of lead and calcium, which adheres to the surface of the lead pipe and prevents further contact of the metal with the water.

In water which contains the sulphate of sodium, the precipitate which results consists of a mixture of the carbonate and sulphate of lead. At the same time the water becomes alkaline to test-paper, and the filtered solution gives a black precipitate with sulphuretted hydrogen. Not only, therefore, has a precipitate of a lead salt formed, but there is also some lead in solution. This is explained in the following way. The oxide of lead, formed by the action of the water, reacts on the sulphate of sodium to form sulphate of lead and hydrate of sodium (liquor sodii); the carbonic acid derived from the air converts the latter into carbonate of sodium, which reacts upon the sulphate of lead to form carbonate of lead and sulphate of sodium again. The sulphate of lead is not absolutely insoluble in alkaline solutions.

With water which contains common salt, the result is analogous, a mixture of the chloride and carbonate of lead being formed. Analogous also is the action of chloride of ammonium, nitre, and nitrate of ammonium.

The action of water which contains gypsum (sulphate of calcium) upon metallic lead is very slight, a precipitate of the carbonates of lead and calcium being formed upon the surface of the metal, protecting it from further action. If the water contains in addition to the gypsum .001 of common salt, the action upon the lead is much greater. The sulphate of magnesium has the same action as the sulphate of calcium.

It will be seen, therefore, that the presence of alkaline salts in water can render partially soluble those salts of lead which are insoluble in pure water, such as the carbonates and sulphates, and thus partially counteract the beneficial effect of the earthy sulphates and carbonates in preserving the pipe from being further acted upon by the water.

M. Rafard states (*Journal de Chimie Médicale*, November, 1874) that the simple addition of sulphuretted hydrogen is not a sufficiently delicate test for lead in water, since the hydrocarbonate of lead, which is formed by the action of pure water upon lead, and which consists of four equivalents of the oxide of lead, three of carbonic acid, and one of water, often exists in the water in a state of such minute subdivision that it cannot be seen by the unaided eye. In such a water it is necessary first to dissolve the lead carbonate before it will be blackened by the sulphuretted hydrogen. In order to effect this solution it is only necessary, before adding the sulphuretted hydrogen, to bring the water to boiling and add a few drops of a solution of tartrate of ammonium which dissolves those lead compounds which are insoluble in water. If these precautions are adopted, the brown color of the sulphide of lead can be seen if only very small amounts are present.

To remove lead salts from water, M. Chevallier (*Annales d'Hygiène*, July, 1874) recommends the use of animal charcoal. This method is especially applicable on board vessels, to remove salts of lead or copper from the water which is provided for drinking purposes by distillation. In many of the distilling apparatuses, the coil for the condensation of the steam is made of lead or copper, and the water thus condensed always contains a certain amount of the salts of the metal of which the coil is constructed. Many cases are recorded of what is termed "dry colic" among the sailors on board of vessels which are provided with such an apparatus.

Experiments of Lowitz and others have shown that animal charcoal is capable of removing from water not only various organic matters, but also many mineral salts, such as those of lead and copper. The treatment of the water is as follows: To each hectolitre (about 26½ gallons) should be added thirty grammes (about one ounce) of well washed animal charcoal; the mixture should be well shaken or stirred several times, and then allowed to settle. The supernatant fluid is free from compounds of lead or copper, and is suitable for drinking purposes. Upon the same principle, by using charcoal filters for water which has flowed through lead pipe, tolerable security against lead poisoning can be obtained, if care be taken not to overtax the filters.

It has long been known that one of the fertile sources of chronic lead poisoning is the use of common glazed earthen-ware dishes for the preservation or cooking of food, especially acid fruits. The glazing of such vessels contains lead, which can be dissolved out by acids. M. Constantin, a chemist in Brest (*Journal de Chimie Médicale*, October, 1874), has invented a new glazing which contains no lead and should be substituted for the lead glazings. This is made by fusing a mixture of one hundred parts of silicate of sodium, fifteen parts of powdered quartz, and fifteen parts of chalk. To these ingredients may be added ten parts of borax, which renders the glass more fusible and adds to the brilliancy and durability of the glazing.

In the *Journal de Pharmacie et de Chimie*, for August, 1874, is given a report by MM. Bergeron and l'Hôte of an outbreak of lead poisoning in which twenty-six persons were affected. Two of the cases proved fatal. The disease was traced to the presence of lead in brine in which butter was kept. Six specimens were analyzed and found to contain amounts of the chloride of lead corresponding to from 2.3 to 7.5 grammes of sugar of lead to the litre of brine.

Lead was detected in the intestines, liver, and brain of those who died. The existence of lead in the brain in cases of chronic poisoning has been denied by many authors. In the above cases, however, all the proper precautions were taken in performing the analyses, and the metal itself was extracted and weighed, so that there can be no doubt of its existence in that organ in some cases.

Dr. A. Manouvriez (*Recherches cliniques sur l'Intoxication saturnine locale et directe par Absorption cutanée*, Paris, 1874) reports in detail thirty cases of chronic lead poisoning, from the study of which he draws the following conclusions: —

"1. In addition to general and indirect poisoning by digestive and pulmonary absorption, there exists a local and direct intoxication by cutaneous absorption, affecting the parts in immediate contact with the lead.

"2. This local intoxication manifests itself by neuralgic pains both articular and muscular, by cramps, trembling, tingling sensations, sensory and motor paralysis, and atrophy.

"3. This local affection, which in most cases coexists with the general affection, can nevertheless in certain cases exist alone.

"4. These local symptoms can advantageously be combated by local external treatment, and prevented by hygienic precautions which keep the skin from contact with the lead preparation.

"5. The greatest caution is necessary in the employment of medicinal preparations containing lead as local applications to the skin."

Of the thirty cases reported, eight handled lead in the metallic form, as plumbers and type-setters, and twenty-two handled it in the form of white lead and minium. Three of the patients presented no symptoms of the general affection, no colic, no constipation, and no blue lines upon the gums.

In painters the local symptoms predominated upon the fore-arm, affecting preferably the right side in those who were right-handed, and the left side in those who were left-handed. The symptoms which were located exclusively or predominated at the points of contact with the lead were motor paralysis (in twenty-two cases), paralysis of sensibility to pain (in twenty-seven), to touch and to temperature (in twenty-six), and to tickling (in twenty-two), trembling (in seven), cramps (in eight), pain (in nine), and tingling sensations (in four). After taking a sulphur bath, the skin at the points of contact with the metal was colored black in eight cases, although no coloration could be seen previous to taking the bath.

(*To be concluded.*)

ZIEMSSEN'S CYCLOPÆDIA.[1]

It is not necessary, were it possible, to enumerate all the changes which the progress of practical medicine during the last fifteen or twenty years has made necessary in treatises on the Practice of Medicine. To allude to a few only of the subjects in which great advances have been made, or which are wholly of recent date, we may mention the relations of Tuberculosis with Pulmonary Consumption; the pathology of Renal Diseases; the physiology and pathology of the Nervous System; the subject of the Bodily Temperature, and its relations to diagnosis and prognosis; the use of the Sphygmograph for the same purposes; the improvement in general and special Therapeutics, including the employment of many new drugs of great power and efficacy: all which show the need of some new and comprehensive work, both for the use of students and also for the busy practitioner who desires to keep pace with the rapid progress of medical science, and who can ill afford the time which must otherwise be spent in the perusal of monographs and of medical periodicals. The volume before us is the first of a series of sixteen which is intended to supply this want. The only work resembling it with which we are acquainted, in the English language, is Reynolds's System of Medicine, which, when completed, will consist of but four or five volumes, and, admirably executed as it is in many respects, is too restricted in its scope.

So far as we have been able to judge from its perusal, the first volume of Ziemssen's *Cyclopædia* fully equals the expectations we had formed of it. It contains articles on the following subjects: *Infectious Diseases, Typhoid Fever,* and *Plague*, by Professor Liebermeister, of Tübingen; *Relapsing Fever, Typhus,* and *Cholera*, by Professor Lebert, of Breslau; *Yellow Fever*, by Professor Haenisch, of Greifswald; *Dysentery*, by Professor Heubner, of Leipzig; and *Diphtheria*, by Professor Oertel, of Munich. These subjects are treated in the most thorough and at the same time practical manner, and the opinions of the writers are compared with those of the best authorities in all countries.

The longest article, occupying about 200 pages, is that on Typhoid Fever, a very complete and valuable treatise on the subject. Professor Liebermeister devotes much space to the consideration of the etiology of this disease. He concludes that the generally received opinion that typhoid *originates* in the decomposition of organic substances is no longer tenable; that "besides external conditions favorable to the development of the poison, something else is necessary. Numerous facts render it more than probable that this something necessary is the specific poison itself. In other words, the poison of typhoid fever does not originate in decomposing substances, but finds in them a favorable ground for its growth and multiplication. The most convincing experiences show that typhoid fever never originates in any unusual amount of decomposing matter, nor from any circumstances favorable to decomposition, but is always preceded by the introduction of a case of the same disease. This opinion, that the poison of typhoid fever is propagated continuously, and never originates autochthonously, was first established by Budd. It has gained ground slowly as yet, but there is every prospect that it will in time become the prevalent opinion." Whatever be the origin of the poison, there can be no doubt that its *propagation* is due to defective hygienic conditions. Hence the importance of vigilance in preventing and remedying these conditions is insisted on. The author believes that while the most thorough precautions will not prevent the introduction of the disease into large cities, when it is epidemic in other places, yet in the cases of individual houses in small places, and of groups of houses in larger places, it is possible to isolate any cases of the fever that may be imported, by means of a proper treatment of the dejections, which should be disinfected in the most thorough manner, by sulphate of iron and crude muriatic acid, and carefully buried in the earth, at a distance from the vicinity of wells. When this is not practicable, and the dejections must be emptied into privy vaults, they should be even more carefully disinfected. The clothing and bed-linen which is soiled by the stools should also be thoroughly disinfected. We wish the importance of these views could be more generally appreciated, especially by the public, in order that those sanitary measures on which the welfare of the community so largely depends might be more thoroughly carried out than they are at present. We have no space to point out the principal details of this admirable memoir, but must refer it to the reader's careful attention, assuring him that he will find it useful and practical, as well as elaborate and learned. We must, however, allude to one point, in reference to treatment. Professor Liebermeister is an advocate for the use of the cold bath (at 68° or lower), in cases in which the bodily temperature is as high as 102.2°. The patient should remain in the bath about ten minutes, then be wrapped in a dry sheet and put to bed, lightly covered, and given a glass of wine. In severe cases it is necessary to repeat the bath every two hours, and twelve baths are sometimes given to a patient in the course of twenty-four hours. The difficulty, we might say the impossibility, of carrying out this treatment thoroughly in private practice, is obvious; in hospital practice it would be of benefit in only a few cases, we should think, at least in this country. Nevertheless the favorable effect which follows it, as shown by careful statistical observations, is so great that we desire to call attention to it. The author thinks that the efficacy of cold sponging is far less than the cold bath, and can never serve as a substitute for it. We hope his preference for his favorite method may be, to some extent, a prejudice, for we believe that by means of frequent sponging with cold water, or perhaps with vinegar, or some evaporating liquid, excellent results may be obtained.

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[1] *Cyclopædia of the Practice of Medicine.* Edited by Dr. H. Von Ziemssen, Professor of Clinical Medicine in Munich, Bavaria. Vol. I. *Acute Infectious Diseases.* Albert H. Buck, M. D., New York, Editor of the American Edition. New York, William Wood and Company, 1874. Pp. 708.

We have read with much pleasure Dr. Oertel's article on Diphtheria, and heartily recommend it to our readers. The account of vegetable organisms, or bacteria, contained in the diphtheritic membranes, in the subjacent diseased parts, and even in the blood of patients affected with the disease, is extremely interesting. By means of inoculations practiced on animals, the author believes that he has furnished the proof that diphtheria begins as a local disease and develops afterwards into a general one. This throws light on the disputed subject of the identity of croup and diphtheria, the former, according to the results of this investigation, being "a simple form of inflammation in which a fibrinous exudation occurs upon the mucous membrane, and which can never pass the bounds of the local process."

The article on Dysentery, by Dr. Heubner, is also one of those complete works, showing an immense amount of patient investigation, which only Germans seem capable of. It will be read with much profit by the practical physician.

We have no room for special remarks upon the rest of the contents of this admirable volume. If the succeeding ones are equal in merit to it, as we are entitled to expect from the names of the authors which are presented to us in the prospectus, the work will prove one of the most useful publications ever issued from the medical press. The American publishers are entitled to great praise for their enterprise in undertaking its presentation in an English dress. The several translators have done their work not only in a faithful but in an elegant manner. There is hardly anything to remind the reader that the book was not written originally in English. The printing is really beautiful, and the appearance of the volume all that could be desired. Finally, the price is so moderate as to put the work within the reach of all who desire to possess one of the best guides in practical medicine.

PROCEEDINGS OF THE BOSTON SOCIETY FOR MEDICAL IMPROVEMENT.

F. B. GREENOUGH, M. D., SECRETARY.

NOVEMBER 23, 1874. — *Fibrous Cyst in the Arachnoid Cavity.* — DR. JACKSON exhibited a very fine specimen of this disease which he had received from Mr. Foley, one of the medical class. The specimen came from a middle aged dissecting-room subject. It was about four and a half inches long and two and a half inches in width midway; and, though now appearing to be a defined and very perfect cyst, it was collapsed when first removed, the opposing surfaces being slightly adherent. One surface was quite thick, tough, and fibrous, but the other was much thinner; and the membrane extended, as usual, somewhat beyond the cavity. It was situated just to the left of the median line, near the vertex, and was slightly adherent to the dura mater; this latter membrane being rather opaque just at this part, but otherwise healthy, as were the membranes generally. The brain was somewhat depressed by the cyst, and towards the base there was in its substance an effusion of blood about an inch in diameter.

Dr. Jackson spoke of two other cases of this disease that he had examined; one was that of a man fifty-five years of age, who was thrown from a chaise in April and died in June. He struck his head, and, though stunned at the time, and much bruised about the face, he was out again in one or two days. Three weeks before his death he took to his bed with severe headache, which continued as long as he could express his feelings; stupor coming on one or two days after the headache, and becoming at last complete. The urine and dejections were involuntary, but there were no convulsions and no stupor. Hemiplegia of the left side was spoken of, but the upper extremity moved when Dr. Jackson saw him on one occasion with the attending physician. The pulse ranged from 120 to 130. The pupils were dilated, and breathing became quick at last. The cyst extended about the whole length of the right hemisphere, and anteriorly came up to the median line; it was about as thick as the dura mater, to which it closely adhered, though it was readily stripped off. It was so tough that it could not be torn by a very considerable degree of force. Within the cyst were from four to six ounces of dark, liquid blood and soft coagula, somewhat brownish. Otherwise the membranes were healthy, as was the brain, though compressed and stained.

In the case of the Hon. Daniel Webster, Dr. Jackson found a fibrous membrane in each arachnoid cavity, yellowish, œdematous, distinctly vascular, quite consistent, and about a quarter of an inch in thickness, but there was no cyst. The membrane adhered to the dura mater but was readily separated. The vascularity of the membrane was an interesting fact, and especially in the present case, as bearing on the hæmorrhage which is so generally found, though this case was an exception. Mr. Webster was thrown from his carriage in the spring, and died in October, of abdominal disease. His head and arm were injured, and he had headache, but no grave cerebral symptom; his mind being clear to the last.

To the above cases, Dr. Jackson said there might be added one that occurred some years ago, at the Massachusetts General Hospital. A man, aged sixty-five years, received a severe blow upon the back of the head and neck, and had pain from that time. A year afterwards he entered the hospital under the care of Dr. Ellis, with his memory much impaired, and rapid failure of his health the last few weeks. Twelve days afterwards he died comatose; but there never had been paralysis nor anything like an apoplectic attack. The cysts, which are in the museum of the Medical College, extended nearly from the median line to the base of the brain. One, upon the right side, contained about two ounces of thin blood and soft coagula, with some yellow fibrine adhering to the inner surface. Upon the left side the walls of the cyst seemed to have been in contact. Both hemispheres were flattened beneath the cysts, which adhered very slightly, if at all, to the arachnoid, but pretty firmly to the dura mater.

Dr. Jackson referred to the theories in regard to the formation of these cysts. Mr. Hewett's well-known idea was that the blood is first effused and that the cyst is a secondary formation; and this explanation seems to have been generally received in England. Secondly, the reverse of the above is generally believed upon the Continent. Whichever theory is adopted, Dr. Jackson thought it a most remarkable form of disease; for there do not seem to be the symptoms of hæmorrhagic effusion; and if an inflammation of the membranes formed ever so slowly, it would seem as if there ought to be very grave symptoms. In the three cases that have occurred here, and of which the history was known, it will be observed that the disease supervened on an external injury — a connection that has been remarked upon by some writers on the subject.

Dr. Fifield said he had never happened to see one of these arachnoid cysts, but he fancied that blood cysts in other parts of the body were not uncommon. He had, when in London, assisted a surgeon at St. Bartholomew's in removing one from the back, which the operator attributed to a blow.

Dr. Jackson said that he was not aware of what the symptoms of effusion of blood into the arachnoid would be. In a case of the late Dr. Osgood's, where the effusion extended down as far as the cord, convulsions rather than paralysis were the prominent symptom.

Dr. Ellis said that he supposed the Continental theory of these cysts was, that they consisted of a fibrous connective tissue regularly organized with blood-vessels. One of these vessels may rupture, and thus produce the bloody contents of the cyst. It is difficult to believe that a simple clot should become as perfectly organized as the walls of these cysts are. Moreover, their gross appearance is certainly very different from what we find in old clots in other parts of the body.

Dr. White, with reference to the supposed frequency of some antecedent injury, suggested whether, in cases where there had been some injury to the head, this fact would not cause the brain to be examined, when otherwise it might not have been.

Dr. Jackson said that these cysts had certainly been found in cases where there was no history of any injury.

Specimens of Injured Bones. — **Dr. Dwight** showed some human bones, remarkable specimens of the effects of injury and disease, which he had found in the cellar of the building containing the Warren Collection of Natural History. Nothing whatever is known of the history of the specimens, which probably belonged to the late John C. Warren, or perhaps to his father.

The first was a specimen of partially impacted fracture of the neck of the femur; the posterior surface showed the impaction very finely, resembling closely one of the bones figured in Dr. Bigelow's monograph on the Hip; but the anterior surface of the neck appeared to be absolutely longer than normal. The eversion of the foot must have been very great.

The second specimen was one of partial dislocation of the hip resulting from disease. The femur was anchylosed to the pelvis in a position of partial flexion and external rotation. A section showed that the outline of the head of the bone was no longer distinguishable.

The third was a specimen of a scapula, with the head and part of the neck of the humerus firmly united with the front of the glenoid cavity. Had the remainder of the bone been there, it must have extended directly outward. Dr. Dwight thought it probable that in this case the arm had been amputated for an injury accompanied with great violence, which had caused both fracture and dislocation.

The fourth specimen showed a very peculiar injury of the lower end of the humerus. Seen from before, the inner edge of the trochlea appeared somewhat hypertrophied but uninjured, and projected strongly forward; while the remainder of the articular surface was displaced backward, as if it had revolved on a pivot through its outer extremity. From above the coronoid fossa, the bone was normal.

The last specimen shown was one of atrophy of the shaft and upper end of the humerus. The bone was barely three fourths of the normal length, but very strong and with the lower end perfectly formed. The head was very much flattened and distorted.

At the next meeting, **Dr. Jackson** showed a specimen from the Society's Cabinet, exactly like the last specimen shown by Dr. Dwight. It was so similar, that had Dr. Jackson himself not removed the humerus in the Cabinet, and seen that the other one was normal, he would have been inclined to believe that they came from the same subject. The specimen was from a man aged thirty-five, who had a fracture of the spine. There was a history of open fistulæ about the shoulder joint, but none of any discharge of bone.

December 14, 1874. — *Extensive Malignant Disease of Liver without Marked Symptoms.* — **Dr. Wheeler** said that having been present at an autopsy of a patient of Dr. Weeks, of Chelsea, and thinking the case an interesting one, he had invited Dr. Weeks to report the case to the Society at this meeting.

Dr. Weeks said that his patient, a woman, aged seventy-five, had been up and about her work until within three weeks of her death. Four days before her death he was sent for, and found her complaining only of a dull pain, which she referred to the epigastrium. She had no distress after eating, no nausea or cough, and no jaundice. Physical examination showed marked dullness in the right hypochondriac region, extending over to the left side; there was some tenderness over the same region. This tenderness increased, and in consultation, in absence of any marked symptoms, it was thought most probable that an acute hepatic abscess had formed. The patient died on the fourth day from the time Dr. Weeks was first called to her.

Dr. Weeks showed the liver, which was enlarged and filled with cancerous masses varying in size from that of a pin's head to that of a hen's egg. The stomach was healthy, as were the other organs.

Dr. Weeks considered the case a remarkable one, from the fact that such extensive disease remained latent so long, and even towards the end did not produce any marked symptoms.

Dr. Jackson said he had seen several cases in which serious hepatic disease remained latent, without symptoms.

Partial Exsection of both Upper Jaws for Enchondroma. — **Dr. Porter** reported the case and showed the specimen.

The patient, a gentleman aged fifty-one, of excellent health, first noticed nine years ago a congested condition around the two central incisors of the upper jaw. These were "pivot" teeth, inserted twenty years before, and as they often became loose, he had been in the habit of replacing the pivots by the ends of matches. There finally resulted a necrosis of the alveolar process around these teeth, which gradually exfoliated. Soon a defined tumor commenced in the above locality, which has been growing for three years. It has been for the most part painless, but has doubled in size within six months. The patient's family history shows no record of tumor.

The tumor now involves the upper alveolar arch nearly symmetrically on both sides, from the first molar tooth on one side, to the corresponding tooth on the opposite side, extending nearly up to the infra-orbital foramina, pushing upwards and forwards the nose and upper lip, producing a very considerable deformity.

The operation for the removal of the growth was performed with ether. A Y-shaped incision was first made, the long arm of the Y cutting through the median line of the lip and the short arms extending, one into each nostril. The coronary artery was controlled by a deep temporary suture in each flap. The soft parts on both sides were then dissected up as high as the level of the infra-orbital foramen, and backwards to the tuberosity of the superior maxilla. The hæmorrhage was readily controlled by sponges stuffed into the wound. The second molar tooth on each side was then drawn, the mucous membrane covering the hard palate cut transversely, and the alveolar process and hard palate sawed through from side to side, and upwards quite into the antra. The anterior wall of the antrum and the nasal process on each side were cut through by a few quick strokes with mallet and chisel, the septum nasi severed at the union with the palate process, and the tumor easily depressed and removed entire. A number of large vessels required ligature, though much less blood was lost than would be supposed from the extensive laceration of the soft parts. The wound was brought together by sutures. The pulse remained good throughout.

The tumor, examined by Dr. R. H. Fitz, proved to be enchondroma. The patient made a rapid convalescence, and returned home on the eighth day after the operation.

In four months from the first operation, he noticed a return of the growth on each side of the nose, and when seen two months later, the tumor of the right side was about the size of an English walnut, involving the nasal process of the superior maxilla; that of the left side was similarly situated but less in extent and size, being as large as a chestnut.

Before the operation for the removal of the tumor was commenced, the patient was etherized and tracheotomy was done. Sponges were then introduced into the pharynx to prevent bleeding into the throat. As in the first operation, a Y-shaped incision was made through the middle of the lip upwards into each nostril. The cheeks were freely dissected up, on the right side as high as the inner commissure of the eyelids, and on the left to a level with the floor of the orbit. The bony attachments were then cut with chisel and mallet, the whole nasal process being removed on the right side and nearly the whole on the left. The wound was closed as before. The tracheotomy-tube was left in for a few hours, until all bleeding had ceased, when it was removed and the wound was closed. The patient rallied well from the operation and made a more rapid recovery than on the first occasion, returning home on the seventh day. The tumors, examined by Dr. Fitz, were like the first, but richer in cells.

Dr. Porter said he wished to call attention to but one practical point in the first operation, and that was the small extent of the incision. The Y-shape of the cut through the median line of the lip, into each nostril, made the circumference of the nostril available and gave an abundance of room for the operation; the resulting cicatrix was very small and entirely covered by the mustache. This method of incision, moreover, results in no paralysis of any of the facial muscles. In the second operation, tracheotomy beforehand did away with the constant sponging of the throat consequent upon the character of the operation, and also with the danger from blood in the trachea.

Enchondroma of the jaws is a rare disease, and particularly so that of the upper jaw. Mr. Paget says of enchondroma, "On the jaws these tumors are, I believe, very rare. I know but one specimen on the upper jaw alone, reported in 'Guy's Hospital Reports.'" In the *Dublin Quarterly Journal of Medical Sciences* for November, 1857, Dr. Oscar Heyfelder, of Munich, reports only eight cases of enchondroma out of four hundred and fifty cases of diseases of the superior maxilla, and this number includes the one mentioned by Mr. Paget. In the Records of the Massachusetts General Hospital is a case of enchondroma of the lower jaw removed by Dr. H. J. Bigelow. Heath (Diseases of the Jaws) says, "Cartilaginous tumors of the upper jaw are of uncommon occurrence," and mentions two cases not referred to above. The size of the tumors varied from that of a hen's egg to that of a man's head. In two cases, the nasal process only was removed; in another, the nasal process and anterior wall of antrum; one partial resection (not defined), and one total removal of superior maxilla; in three cases no operation on account of extent of disease. I can find but few reported cases of partial or total exsection of both upper jaws. Partial resection of both bones was done in 1824 by Roger, afterwards by Liston and Dupuytren; but the first total removal of both upper jaws was done by Dr. J. F. Heyfelder, of Munich, who did it three times in 1844, and afterwards in 1850 and 1852.

Fracture of the Neck of the Femur, simulating Impaction.— DR. H. J. BIGELOW showed the specimen and reported the case, which, he said, was interesting as showing how a fracture near the head of the femur might present the signs of an impacted fracture of the base of the neck, and so promise a bony union, which was unlikely to occur. The patient, a middle-aged woman, was in some way injured by a horse-car. She was at first helped into the car, and after riding some distance, and finding herself very lame, was sent home in a carriage and put to bed. Dr. Bigelow, when he saw her in consultation, three weeks afterwards, made a careful examination. He found that the trochanter rotated in the socket, in the arc of a circle which had the head of the femur for a centre; there was no crepitus, slight eversion, and a shortening of an inch. These symptoms pointed to posterior impacted fracture through the base of the cervix. The only other injury which was likely to produce these signs was the rare one of impacted fracture of the head, for the differential diagnosis between which and impacted fracture through the base of the neck there is no guide except its comparative rarity. There was a callous prominence behind the trochanter, which last was an inch too near the spinous process of the ilium.

The prognosis in this case seemed on the whole favorable, although the patient was a feeble one. She got along quite comfortably, and was, at her own request, helped up every day into a chair to vary the depressing effect of confinement to bed. She was thus able to get out of bed every day, from the first day of the accident. Towards the end of the sixth week, however, she sank and died.

The autopsy showed that the fracture was not through the base of the neck, but through the neck itself, close to the head, and that the fragments were "rabbeted" together. There was motion enough to have worn away the thin walls of the neck, and to show that any future bony union, had the patient lived, was not to be hoped for. In this respect it differed from Dr. Gay's case of impacted fracture into the head, where the patient, on the day of his death from pneumonia, a week or two after the accident, lifted up his leg, and said that as far as that went he was getting on well. Had that man lived, he would undoubtedly have had bony union, and a serviceable leg.

The rabbeting of the fragments together was shown very well in the present specimen. It was due to a conical mass of comparatively dense bony tissue projecting from the head fragment, which was driven into the loose cancellated structure of the portion of the neck on the shaft fragment. This dovetailing, although sufficient while the fragments were surrounded by the capsule and soft parts, to prevent crepitus, and to cause the neck and head to rotate in the socket as a whole, did not prevent such attrition of the fragments as would hinder bony union.

AMERICAN SURGERY.

The address recently delivered by Mr. Erichsen at the University College Hospital, on his return from this country, is a well-merited and gracefully delivered tribute to the American medical profession. During his travels last summer, Mr. Erichsen visited a large number of our cities; and although his sojourn in any one of them was necessarily brief, he has succeeded in portraying pretty accurately our prominent characteristics, and more particularly those of that branch of which he himself is so distinguished a member.

His remarks and criticisms cannot fail to be read with as much interest by American surgeons as they doubtless have been by our transatlantic brethren; not merely on account of the high reputation of their author, but also as affording an impartial estimate of our profession from a foreign source.

Mr. Erichsen was particularly struck with the social status of the profession, which, he justly says, occupies a much higher position relatively to the rest of the community than is the case in England. This is undoubtedly true, although the contrast is greater in some other countries, as any American physician who has spent some of his time in study on the Continent of Europe cannot fail to have observed. With us, the leading physician of a place, whether it be a small country town or a large city, always occupies a high social position, and is quite likely to be one of the most prominent and influential men of the community.

Surgery in the United States, he thinks, stands at a very high level of excellence. Not only in the large cities, but throughout the country, the standard of operative surgery seemed to him very high. The bent of the mind of the American surgeon is, he says, like that of the English surgeon, practical rather than scientific; in fact, he finds a striking similarity between American and British surgery. This he attributes to the fact that we have both drawn our knowledge from the same source; that the names of Cooper and the Bells, of Liston and of Brodie, are as familiar to our ears as to those of his own countrymen. We should not forget that the literature of the two countries is practically the same, that every English writer writes for a public of eighty millions. If, as Billroth says, English surgeons stand highest and English surgical literature is the best in the world, we should be gratified by the favorable comparison. The truth is, American surgery does stand very high, and other countries are beginning to realize the fact.

Mr. Erichsen touches upon our system of medical education with a gentle hand, in his desire, perhaps, to point out the bright side only. The imperfections of the British system are also great. It would be well if the work of reform which is germinating here should find imitators in the schools of London; a very thorough change in the present English system would certainly be necessary to attract those strangers who now flock yearly to Vienna and Berlin, as they did in former times to Paris.

The reform in hospital construction has also found England somewhat behindhand. The experience gained in our late war has given us the lead in this movement, and the enterprise of our physicians has produced a vast variety of structures which in the light of future experience will go far towards solving the difficult problem. We have been quick to observe the necessity of this change, and fortunately do not find ourselves to-day with such elaborate and expensive structures on our hands as the brand new St. Thomas's, of London. A considerable part of the address is indeed devoted to a description of our hospitals. Mr. Erichsen thinks the Roosevelt Hospital, at New York, "without exception the most complete medical charity, in every respect," that he has ever seen.

The Army Medical Museum at Washington is spoken of in terms of the highest praise, while elsewhere, except in Boston, he found the museums still in an undeveloped condition.

With the exception of a few great men in our profession, American physicians and surgeons have in times past not been so widely known as those of many older nations. With the present facilities of transportation, we are brought daily in closer contact with all parts of the world, and the fault will be ours if the profession does not take that stand which the merits of our countrymen are undoubtedly able to give it.

A NEW VOLUME.

It will hardly be necessary to remind our readers that the present number is the first of a new volume; our annual prospectus has already heralded this fact to them in advance, and has, moreover, prepared them in a measure for the holiday attire in which the Journal now appears. We trust that no apology is necessary for what might be looked upon as an unseemly display of youth and vigor at the present advanced age of this venerable periodical; we hope, on the contrary, that these changes will be considered evidence that the JOURNAL has not passed its prime, but that it has gathered, during the half-century of its existence, experience which will give it increased facilities to place before the profession material of a character suited to their present wants, will entitle the opinions expressed to some weight with those who have been familiar with its pages in times past, and will enable it to work with unusual advantages in new fields of labor in the future. Such at least should be the fate of a journal originating from good old New England stock, and sustaining for so many years a vigorous existence.

THE WARREN PRIZE.

WE would call attention to the advertisement of the Warren Triennial Prize. This was provided for in the will of the late J. Mason Warren, in honor of the memory of his father, John C. Warren. The trustees of the fund are those of the Massachusetts General Hospital, and a committee of the staff of the hospital constitutes the judges. The prize was won for the first time in 1871, by Dr. H. C. Wood, of Philadelphia. No essays were presented for the prize of 1874, for which year the subject proposed was "The Elimination of Drugs by the Mammary Gland." No special subject is given for 1877, but competitors have the full latitude allowed by the will to choose any subject in physiology, surgery, or pathological anatomy involving original researches. The sum offered is a handsome one, and we hope will call out many papers. A prize of this nature may, like the quality of mercy, be called twice blest, as the honor which falls upon the successful competitor is reflected on the memory of the eminent surgeon in whose commemoration the prize was established.

SURGICAL OPERATIONS AT THE MASSACHUSETTS GENERAL HOSPITAL.

[SERVICE OF DRS. BIGELOW AND CABOT.]

SINCE the last report (December 5th) operations have been performed under ether in the following cases: —

1. Cancer of the breast. 2. Phymosis. 3. Punctured wound of radial artery. 4. Ovarian tumor. 5. Fistula in ano. 6. Necrosis of femur. 7. Dislocation at shoulder-joint. 8. Deformity of face. 9. Extrophy of bladder. 10. Fissure of lobule of ear. 11. Necrosis of tibia. 12. Caries of vertebræ. 13. Fatty tumor of thigh. 14. Cancer of breast. 15. Double hare-lip. 16. Nævus. 17. Hæmorrhoids. 18. Cancer of breast.

The following operations were performed without ether: 19. Penetrating wound of chest with division of the subclavian artery and vein. 20. Hydrocele. 21. Polypus nasi.

3. The patient was a male negro. While opening a tin can with a pocket

knife, the latter slipped and entered the fore arm about one and a half inches above the wrist. The puncture was followed by a profuse flow of arterial blood. Perchloride of iron was applied by a physician and the arm was bandaged. The patient entered the hospital two days later with a good deal of pain and tension in the fore arm, which was distended, as if by coagulum, as high as the elbow. The original wound was enlarged, and on removing a laminated clot the radial artery was found to have been completely transfixed; it was tied above and below the wound.

4. The ovarian tumor, removed by Dr. Cabot, was a dermoid cyst. The case, when completed, will be reported in full in the JOURNAL.

7. The dislocated shoulder was of seven weeks' standing; the patient, a middle-aged woman. The adhesions were broken by forced rotation, alternately in either direction, with the elbow at right angles. Horizontal traction was now applied to the arm for a few minutes, after which an assistant, standing above the patient, extended the arm vertically upwards, at the same time depressing the shoulder with his foot. The limb being suddenly brought down to the side with the arm of the operator in the axilla, the luxation was found to be reduced. Dr. Bigelow remarked upon the advantage of vertical extension with depression of the shoulder. It pries the head of the bone out of the axilla over the acromion as a fulcrum.

14. With regard to cancer of the breast Dr. Bigelow remarked that when a case was otherwise favorable for operation, as when the disease was not rapid in its growth, or the axilla not largely involved, and when sound skin could be secured to cover the wound, the clinical indications for operation might be enumerated as pain, ulceration, fœtor, and hæmorrhage. But beyond these considerations, others might justly influence the surgeon; among them, a desire on the part of the patient to be rid of the outgrowth; and sometimes a more exceptional motive, as in the present instance. The breast was large, and the disease had extended to the axilla; but the patient had decided to resort to a charlatan and cancer plasters, if it were not thought best to operate at the hospital. To save the patient from this suffering, Dr. Bigelow did not hesitate to perform an operation which he had not recommended. But the skin being sound, the wound would probably do well, although life might not be prolonged as in some more favorable cases.

19. A young man was stabbed at midday in the street, beneath the left collar-bone, about two inches from the coracoid process. The hæmorrhage being profuse the patient fell and fainted. A physician arrived in a short time, passed a finger into the wound, and checked the hæmorrhage, but, as the event proved, too late. The patient was placed in a wagon and brought to the hospital, where he arrived pulseless, with cold extremities, but still gasping. The blood escaped with a jet from the wound when pressure was momentarily removed. Dr. Bigelow, who saw him, passed his finger into the orifice and held the vessels while the wound was largely extended. Both ends of the subclavian artery and vein were then tied. Artificial respiration was at once established, and warm water injected into the vein of the opposite arm. Electricity was also applied to the chest and præcordial region. After all respiration had ceased, the intercostal muscles were again made to contract to

a remarkable degree by dividing the integument and applying the current directly to the muscular fibre. The failure to revive the patient was due, as the autopsy showed, to a penetrating wound of the chest producing pneumothorax with complete collapse of the left lung, which had been transfixed by the stab.

H. H. A. BEACH, M. D.,
Surgeon to Out-Patients.

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SURGICAL OPERATIONS AT BOSTON CITY HOSPITAL.

[SERVICE OF DRS. CHEEVER, THORNDIKE, GAY, AND INGALLS.]

THE following operations were performed on Tuesday and Friday, December 22d and 25th, 1874: —

1. Exploratory operation for foreign body in the neck. 2. Cock's operation for stricture of urethra. 3. Prolapsus recti. 4. Re-amputation of thigh. 5. Hæmorrhoids treated by galvano-cautery and ligature. 6. Recto-vaginal fistula. 7. Cheloid growth of the scalp. 8. Removal of wire-sutures from an ununited fracture of radius and ulna. 9. Cancer of the breast.

1. A young man seventeen years old received a pistol ball in the back of his neck, November 30. He was examined under ether at the time, by Dr. Gay, who found a small punctured wound, an inch to the right of the median line, on a level with the first cervical vertebra, extending directly inwards to the lamina of that bone. No ball was found. There have been no symptoms of the presence of a foreign body in the neck, pharynx, or vicinity. Dr. Cheever cut down upon a small, hard, movable lump, situated over the anterior edge of the trapezius muscle; the body proved to be a gland. He also examined the original wound, and found necrosis of the vertebra. The ball was not found.

2. Five years ago this man, twenty-nine years old, had gonorrhœa. He has had symptoms of stricture for two years, requiring the catheter at times. He has had one attack of retention since his entrance, on the 14th ult., which was relieved by the aspirator. The stricture is in the bulbous portion of the urethra, and admits only a capillary bougie. He frequently has a prolapse of the rectum from the violent straining to empty the bladder.

Dr. Thorndike performed Cock's operation for "tapping the urethra at the apex of the prostate, unassisted by a guide staff." An elastic catheter was fastened in the wound, thereby giving the bladder a free outlet.

3. The boy is two years old, and has had the prolapse two months; it has been reduced once during this time.

The tumor, which looks not unlike an hypertrophied cervix uteri, is two inches long, surrounded at its upper part by a ring of florid granulations; below, there is a space from which the mucous membrane has been removed by friction, leaving a grayish, unhealthy surface. The sphincter is so weakened by distension that the bowel can be kept in place only by external pressure. The patient having been etherized, the prolapsed intestine was returned, and a compress and T-bandage applied.

Dr. Cheever spoke of the great difficulty of curing these cases in young children. He treated one case successfully with a ring pad and a truss spring, the leverage being over the sacrum. The treatment lasted several months.

4. This man, aged twenty-one, had his right thigh amputated at the junction of the middle and lower thirds, for compound fractures of the femur and ankle joint. The operation was done September 10th, by the antero-posterior skin flap method. Esmarch's bandage and tubing were used satisfactorily to control the hæmorrhage. The tissues were found greatly distended with effused blood at the place of removal. A portion of the flaps sloughed, leaving the bone uncovered. Dr. Thorndike dissected up the soft parts, removed about two inches of the femur, and closed the wound with sutures.

5. Hæmorrhoids in a woman forty years of age. Dr. Cheever tied some of the veins, and cauterized the remainder in the following manner: a tumor was seized with forceps, a clamp was applied, and the tissues burned down to the clamp with the galvano-cautery, nothing being removed by the knife. The hæmorrhage from those tumors treated in this way was so free that it required the application of ferric-alum.

6. The fistula was the result of a specific stricture of the rectum. The patient is thirty-two years old and had had symptoms of obstruction in the rectum for six months previous to her entrance to the hospital in October. At present she has no stricture of the bowel, but a recto-vaginal fistula, situated just above the external sphincter ani, the vaginal orifice being on the left, near the posterior commissure. It has been treated with the galvano-cautery, and by dividing the external sphincter ani. Dr. Thorndike pared the edges of the vaginal orifice and closed it with three wire sutures. He applied the galvano-cautery to the posterior portion of the fistula.

7. The patient is a colored man, aged twenty-four. About a year ago he received a wound from a comb, on the posterior, lower part of the scalp. It never quite healed, and now there is a raised, tuberculated growth, two inches long. It is very troublesome on account of the bleeding and smarting on the slightest irritation. Various applications have been made to it with no benefit. The growth was entirely removed by an elliptical incision, and the wound partially closed by sutures.

GEO. W. GAY, M. D.

LETTER CONCERNING MEDICAL MATTERS IN LYONS.

[FROM AN OCCASIONAL CORRESPONDENT.]

MESSRS. EDITORS: — Lyons, occupying the same position in Europe in regard to the ether question which Boston does in America, and being rarely visited by American physicians, it has occurred to me that perhaps your readers might be interested in a few facts about the place, which during a stay of seven weeks I have been able to see pretty thoroughly.

In spite of the facilities for teaching given by large hospitals, there is no Faculty of Medicine at Lyons, and the profession in the city feel naturally that the second city in France had more claim than Nancy, with its thirty thousand inhabitants, to which the Strasburg school was transferred after the cession of Alsace and Lorraine. During the last session of the Assemblée Nationale a bill was introduced, and reached a second reading, to establish a full Faculty, instead of the Primary Medical School which now exists. Hopes are entertained that the bill may be gotten through in the next session, but the opposition from the Paris Faculty and other quarters is strong.

The civil hospitals, four in number, and with accommodation for about three thousand five hundred patients, including the insane, are all under one administration, which is entirely independent of either the general or the city government, and which has large means at its disposal — an income of about seven million francs a year, I am told.

The Hôtel Dieu is situated very centrally, with a long façade on one of the quais of the Rhône, and has about twelve hundred beds for general medical and surgical cases in all persons above sixteen years of age, and affected with diseases other than mental, venereal, or cutaneous. Almost all the beds are entirely free, without departmental, or even national, distinction, and hence they get a good many patients from a distance. The building is enormous and the wards are in proportion, there being at least four which contain a hundred beds each. The administration would like to sell it, and build a new hospital on modern and hygienic principles, but the city has only twenty millions of francs, and the state has apparently enough barracks.

One of these hundred-bed wards forms part of the service of M. Ollier, whose visits, as you may imagine, I followed frequently. Unfortunately for the hospital, his term of service (the surgeons are appointed for eighteen years) expires January 1st, 1875, and I am told that there is but small chance of his getting a prolongation. You see that we Americans do not stand alone in the principle of rotation in office, and the result in this case is that M. Ollier, at forty-five years of age, will be deprived of those means of advancing surgical science which only a hospital service affords.

Ether, which does not strike me as being of so good a quality as that to which I have been accustomed at home, is given fearlessly enough on a sponge inclosed by a bladder, which bladder is again inclosed in a cloth bag. Air is admitted through one or two small holes. In comparison with us, they save ether, but lose time. But it is refreshing to see again a patient thoroughly anæsthetized, when undergoing an operation, after the half measures which the fear of chloroform brings about in Vienna.

I was particularly struck with the rarity of accident surgery. The fact that the great manufacture of Lyons is in the true meaning of the word a *manufacture* — only the plainer and cheaper qualities of silks are woven by steam — no doubt has something to do with this. Another element in the problem is that the French are not nearly so reckless in their management of railways and machinery as we are. Perhaps when wine becomes the ordinary, as whiskey is now the extraordinary, drink of our working classes our hospital surgeons will have more undisturbed nights.

During this last summer there was a great deal of typhoid fever here, and the treatment by cold baths was very largely employed. All those with whom I have talked have expressed themselves as very well satisfied with the results, but as the statistics are not yet ready for publication I can give you no figures.

The Charité Hospital includes the medical and surgical services for children, the maternity, a ward for epileptics, and one for the aged poor of both sexes. "We etherize with chloroform," said the surgeon-in chief to me. He asked me how long it generally takes with us to produce complete anæsthesia with ether, and on my replying, five minutes, he disappeared for an instant and came back with a small boy and the request that I should make a demonstration. The best sponge I could find was but poorly suited for the purpose, but owing to good luck the boy was perfectly insensible in about two and a half minutes, a result which seemed to surprise the surgeon and internes.

The Hospice de l'Antiquaille is high up on the precipitous right bank of the Saône, with good air and a fine view, but the building is very ill adapted for a hospital, and the male venereal wards are frightfully dirty. The hospital is for venereal and cutaneous diseases and for the insane, also for scrofulous children. M. Diday's term of service expired some time since, so I did not have the pleasure of seeing him, but found MM. Gailleton and Dion, the surgeons-in-chief, most polite and friendly, as indeed were all of the profession with whom I came in contact in Lyons.

The hospital of La Croix Russe is a new and well-built hospital for medical cases only, and for the inhabitants of the quarter of the Croix Russe; but it is this quarter in which almost all the silk weavers live. This hospital contains about five hundred beds, and is much nearer what a hospital ought to be, in regard to construction, than any other in the city.

It remains for me to mention the convalescent hospital of Ste. Eugénie, in connection with the Hôtel Dieu and the Croix Russe. It is admirably situated and arranged, is about five miles from the city, has a large room for exercise during bad weather, a reading-room, and room for games, besides a large and pleasant garden. It was founded by the ex-empress, and accommodates about seventy-five patients. Near this, suitable buildings are in process of construction for the insane and the aged poor, who will be provided for here instead of in the city.

I had the pleasure of seeing and talking with M. Chauveau in his laboratory at the veterinary school a number of times. As it was vacation and extensive repairs were under way, no experimental work was going on. During the last year he has made very extensive experiments on the transmission of tuberculosis to animals both by inoculation and by ingestion, and means to continue them this winter.

In conclusion I will merely say that I can recommend Lyons to any one with the same object which I had in view on going there, namely, to gain some insight into French medical practice, and to study French without continual temptation to speak English. FREDERICK C. SHATTUCK.

BERLIN, *November* 10, 1874.

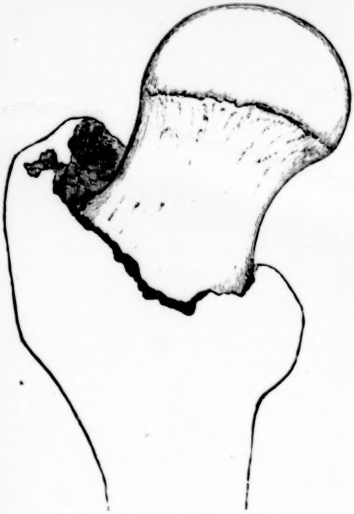
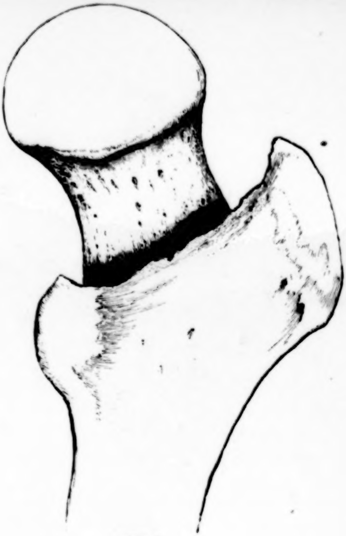


Fig. 7.



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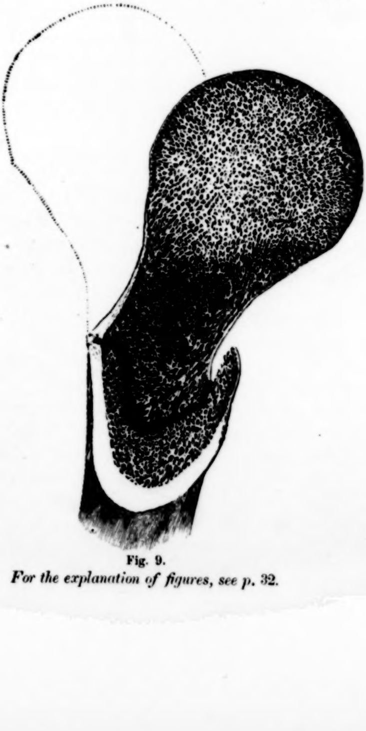

Fig. 9.

For the explanation of figures, see p. 32.

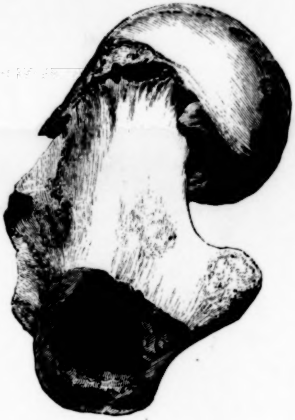

Fig. 10.

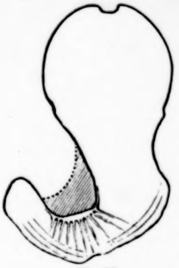

Fig. 13.

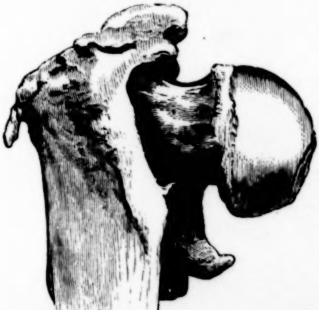

Fig. 11.

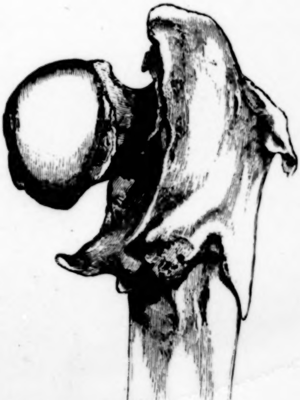

Fig. 12.